URISA Certified Workshops

Each year, URISA invests considerable resources in the development and production of URISA Certified Workshops. The workshops span a wide variety of geospatial topics and have been regularly evaluated and improved during URISA-sponsored events.

Current URISA Certified Workshops:

- 3D Geospatial: Project Implementation Methods and Best Practices
- Addresses and IS/GIS Implementation: Key to GIS Success
- An Overview of Open Source GIS Software
- Asset Management: Planning, Strategy, and Implementation
- Best Practices for Developing Geographic Information Models
- Building Quality Spatial Data
- Cartography and Map Design
- Database Development and Conversion
- Digital Orthophotography
- eGovernment – Planning, Policy and the Portal
- Field Automation Options for Local Government
- GIS Enterprise Architecture & System Integration
- GIS Program Management
- GIS Strategic Planning
- Integrating Civil Engineering and GIS/IT Disciplines
- Internet GIS: State of the Art
- Introduction to Digital Imagery and Remote Sensing
- Introduction to Global Position Systems
- Introduction to Object-Oriented Spatio-Temporal Data Modeling
- An Introduction to Public Participation GIS: Using GIS to Support Community Decision Making
- LIDAR Concepts, Principals and Applications
- Public Data, Public Access, Privacy, and Security: U.S. Law and Policy
- Quality Management: Introduction to Issue Tracking
- Transportation Spatial Database Design

URISA's Workshop Development Committee issues a Call for Workshop Proposals each year, so watch for new workshops to appear on the list over the coming months.

If you have an idea for a workshop that is not on the list, send a note to info@urisa.org and let us know. Perhaps we have some URISA members who are interested in developing the topic into a workshop.

3D Geospatial: Project Implementation Methods and Best Practices

The convergence of new technologies and business requirements is fostering a new wave of 3D geospatial applications that allow users to access virtual built environments. Urban governments are using complex 3D data and visualization tools to support emergency preparedness, urban planning, and many other business practices. This course introduces the data, systems, and processes to be considered when implementing 3D applications. Using extensive case studies and several group exercises, attendees will learn how to navigate the dizzying array of options and prepare for a sustainable 3D geospatial practice. Specific topics include:

- Guidelines for project implementations using 3D technologies
- Introduction to a wide range of 3D analysis and visualization software
- Aerial and terrestrial 3D data acquisition methods, as well as update techniques
- Case studies of urban applications
- An introduction to 3D data models, including emerging open standards and best practices for model development

Intended Audience: Project managers creating or maintaining 3D data, geospatial data analysts considering integration of 3D technology, and local and regional government leaders implementing 3D geospatial programs.

Addresses and IS/GIS Implementation: Key to GIS Success

Street addresses are the key, user-friendly geospatial identifier used by everyone, but addressing processes are usually poorly organized at the local level. This workshop will help you understand the addressing process, managing address data, and organizational challenges. It will guide you in developing a Master Address Repository that serves the needs of the entire organization. The workshop will also review the new draft Federal Geographic Data Committee Street Address Data Standard (in review), and help you understand how the standard can help you build quality address data. Specific topics include:

- What is an address?
- What are the types of address?
- How are addressing systems structured, and addresses assigned?
- How do you develop a Master Address Repository
- Geocoding and managing addresses in the GIS
- Organizational Issues with Addressing
- Working with the FGDC Street Address Data Standard

Intended Audience: GIS Managers, staff members who assign, maintain or use addresses. This workshop will focus on managing address workflows, address data, and use.

An Overview of Open Source GIS Software

Free and open source software (FOSS) has been offering choices to computer users for a number of years. Over the past few years the open source choices in GIS have been broader and more capable than ever before. This workshop will focus on GIS open source software. It will give an overview of current developments from technical and management perspectives. Selected packages and their applications in various projects will be demonstrated and discussed. Specific topics include:

- Open Source GIS background and development
- Overview of Open Source GIS spatial functionalities
- Live demonstration
- Interoperability: The Open Source GIS spectrum
- Planning and implementation issues

Intended Audience: Anyone interested in free and open source geographic information system software. The workshop will suit both managerial and technical needs and it does not require any prerequisites.

Asset Management: Planning, Strategy, and Implementation

Public and private agencies face continuous challenges to accomplish more with less as increases in demand, regulatory requirements, infrastructure deterioration, and political and economic forces have significantly outpaced increases in capital and operating budgets. Many of these agencies are turning to Asset Management to cope with these challenges and improve business performance and effectiveness. This workshop will focus on several aspects of developing an asset management system that could help improve performance, reduce long-term costs, and maximize return on investment in infrastructure assets. Specific topics include:

- Strategy and Planning
- Data Collection Methods
- Software Solutions
- Information Management and Decision Support Tools
- Evaluation and Performance Measures
- GASB34 Reporting
- Life Cycle Costs

Intended Audience: This workshop is intended for utility, transportation, engineering, planning, and environmental managers and analysts of the public and private sectors.

Best Practices for Developing Geographic Information Models

Even with decades of experience, effective design of a GIS database remains a combination of art and science. This workshop shows how you can build on your existing data and skills to take advantage of the latest generation of GIS tools and practices for database design. After an introduction to the fundamental concepts of GIS database design, we will present and discuss case studies of GIS databases designed for managing land parcels, inventorying municipal facilities for emergency preparedness, and automating a permit application. In the exercises, you will develop portions of conceptual, logical and physical data models. Through these case studies of successful and effective systems, you will gain a better understanding of the issues you can face, as well as the tools and processes you can apply, in developing many other kinds of systems. *Specific topics include:*

- The key phases in iterative database design
- Developing use cases
- Ten steps to follow for conceptual, logical, and physical information modeling
- Using database templates to build on your existing data sources
- Understanding the relationships between your map layers and geographic database objects

Intended Audience: This material is intended for technical managers and designers of GIS databases and applications. Skilled database users will also benefit. No programming experience is required.

Building Quality Spatial Data

Spatial data plays a big part in the Information Age, from on-line mapping services to downloadable data from thousands of government agencies. Do you always trust spatial data? Do your users trust your GIS data? Creating and maintaining accurate spatial data is one of the keys to a successful GIS implementation. Without quality data, the most user-friendly GIS will not be accepted and used by it's intended audience. This course will present best practices, processes, quality control and quality assurance techniques for developing and maintaining high quality spatial data that users will trust and utilize. Specific topics include:

- Guidelines for selecting the appropriate levels of quality and accuracy
- Establishing an effective data quality control program
- Data conversion quality control / quality assurance
- How to attack and defeat quality problems
- High quality processes lead to high quality data
- Principles and processes for statistics-based quality assurance testing

Intended Audience: Project managers and technical staff creating or maintaining spatial data, GIS users considering acquiring or developing new spatial data – both in the government and private sectors, and spatial data users who need a better understanding of how quality data is developed.

Cartography and Map Design

Effective maps are well designed and clearly portray a geographic message. This workshop presents the basics of cartography that may have been missed with geographic information systems (GIS) training alone. Cartographic principles and guidelines are covered, providing GIS practitioners with useful information toward constructing quality maps from a GIS database. Specific topics include:

- Projections
- Map Elements Generalization
- Symbol Selection
- Topography
- Thematic Mapping Techniques
- Interactive Mapping
- Overall Design Considerations

Intended Audience: This workshop is designed for the individual that is new to GIS but needs to create maps to assist in data presentation and has not had specific training in cartography.

Database Development and Conversion

Data conversion can be one of the largest impediments to implementing a successful geographic information system (GIS). As an introduction to conversion fundamentals, this workshop provides participants with a foundation for finding successful alternatives and avoiding pitfalls. The workshop employs digital and printed examples of raster and vector data, conversion methodologies and strategies. Local government practitioners lead this workshop in discussing the personnel, process and project management issues that will help in choosing a successful route in performing a data conversion.

Digital Orthophotography

Production and Application: Digital orthophotography has gained popularity as a data layer in Geographic Information Systems (GIS), Land Information Systems (LIS) and Automated Mapping and Facilities Management (AM/FM) projects. This workshop will explain the technical process of producing digital orthophotography. Topics will include ground control, aerial photography, control extensions, digital scanning, surface models, ortho-rectification, and output products. This workshop will cover important considerations when planning and implementing a digital orthophotography project. The workshop will also discuss numerous applications of digital orthophotography including map revision, parcel mapping, land use mapping, soils mapping, and facilities management. The attendees will receive valuable insight to reasons for the popularity of digital orthophotography, how to get started, and how to avoid problems.

eGovernment – Planning, Policy and the Portal

eGovernment initiatives are expanding exponentially in all levels of the public service. This workshop is a must to understand the full scope of what eGovernment is and to assess the role that technologies such as GIS need to play. The workshop will focus on planning towards implementing enterprise eGovernment services, policy considerations, and the various elements that go into the eGovernment portal as the key electronic service delivery mechanism. Specific topics include:

- eGovernment models, challenges and implementation planning
- eGovernment portal architecture and best practices (sample winning sites)
- The policy issues including freedom of information vs protection of privacy
- Data ownership/data distribution variables (e.g. free or fee)
- Case studies – real world examples of eGovernment from three levels of government: Geospatial One Stop (federal); Access Kansas; and Washington, D.C.

Intended Audience: IT Directors/Managers, GIS Managers and operational personnel responsible for one or more aspects of electronic service delivery (existing or planned) in their organization.

Field Automation Options for Local Government

One way to meet demands for providing superior service levels and operational efficiencies under tightening budget constraints is to leverage new technology that places GIS data in the hands of field crews. This allows for improved management and better maintenance of work processes to properly appraise infrastructure assets and to meet service request response times.

This workshop is designed to provide local government managers with practical guidelines for building an effective mobile GIS program across multiple departments. Specific topics include:

- Practical guidelines for building a mobile GIS
- Business drivers for moving GIS technology and data into the field
- Alternative strategies for implementing GIS-based field solutions
- Overcoming obstacles to automating field processes
- Steps in the mobility implementation process

Intended Audience: Supervisors and managers responsible for public works operations. GIS and IT department managers interested in mobilizing user applications and Mobile GIS project managers.

GIS Enterprise Architecture & System Integration

The objective of this workshop is to examine both GIS enterprise architecture and the integration between various systems (GIS included) in an organization. Workshop instructors will examine the past, current, and future of GIS within an enterprise context, and apply the experience, discipline, and future direction of the Information Systems (IS) profession to Geographic Information Systems (GIS). This workshop will provide GIS professionals with an understanding of some of the complex technical and specific technical management issues that must be addressed. Specific topics include:

- Definitions of Enterprise GIS
- Definitions of System Integration
- Architecture design and development
- Management and phasing of enterprise environments
- Staffing and maintenance of enterprise environments
- Network, data and web architectures and roles in the enterprise
- Open systems and standards
- Future issues and trends

Intended Audience: This workshop is intended for public and private sector managers, elected officials, and policy professionals, database developers and administrators, and GIS professionals.

GIS Program Management

Today, most government organizations have some type of GIS programs in place. They vary from being in their early stages, to rebuilding or tuning up phase, to completely being changed as new technologies and applications emerge. This workshop is designed to provide guidelines for managing your GIS program. It will look at the various organizational and technical issues program managers must address in order to develop a successful GIS program. The discussions will include managing all aspects of a GIS program from staffing and budgeting to procuring technology and working with vendors. A variety of real world examples will be presented showing a range of GIS programs and their implementations. This workshop presents an overview of successful and unsuccessful techniques for implementing GIS. Specific topics include:

- Program development
- Project management techniques
- Budgeting
- Staffing
- Sustaining program support
- And managing consultants and vendors

Intended Audience: GIS Program Management is a must for anyone embarking upon a GIS program, involved with a less-than-successful GIS, or who is seeking ways to improve a successful implementation.

GIS Strategic Planning

Strategic planning is a vital tool for all geospatial programs, at any stage of development. An effective strategic plan is crucial to ensuring that a GIS program gets started right. As a GIS program matures, strategic planning methods are important tools for program management, program review, responding to change, and solving problems. An effective strategic plan will help you win program approval and funding, ensure that program goals and return on investment are achieved, and keep a program on track in a changing environment. This course teaches strategic planning methods and tools in the context of developing and managing a GIS program. Participants will learn how to successfully select and apply appropriate methods for a variety of situations. Specific topics include:

- Strategic planning models, methods, and tools
- Selecting and applying the best approach for any GIS situation
- Developing an initial GIS strategic plan
- Integrating GIS, IT, and organizational strategic plans
- Developing an effective action plan and ensuring follow-through
- Updating a GIS strategic plan
- Conducting a GIS program review and effecting improvement

Intended Audience: GIS managers and staff, GIS users and program participants, and managers, executives, and other professionals who are involved with GIS programs.

Integrating Civil Engineering and GIS/IT Disciplines

"Wow! I just accomplished in 10 minutes with one program [GIS] what took me two or three days using MicroStation, Excel, and the online Property Appraisers site! I am incredibly impressed by what this program can accomplish."

The integration of GIS technology into civil engineering has seen a dramatic increase in recent years. Solutions have become more sophisticated as the usefulness of GIS has become increasingly apparent to civil engineers. GIS and related information technologies are now being used by civil engineers in many aspects of project development and infrastructure management – from preliminary studies thru final design and for day-to-day operations, facilities maintenance and asset management. Specific topics include:

- Engineering industry trends and opportunities for integration
- GIS and the infrastructure lifecycle
- CAD interoperability/integration
- GIS fundamentals (in engineering terms)
- Modeling and simulation
- Asset and maintenance management

Intended Audience: This workshop is intended for GIS/IT professionals that support engineering functions within an enterprise; project managers and analysts dealing with both CAD and GIS data; as well as civil engineers and planners that are interested in leveraging GIS technology.

Internet GIS: State of the Art

(workshop must be held in computer lab with proper software installed)

The objective of this **hands-on** workshop is to offer an introduction to geographic information systems (GIS) functionality on the Internet. This workshop will focus on the understanding of the fundamentals of Internet GIS, and the assessment of different Internet GIS technologies including server-side and client-side processing. The workshop includes hands-on exercises.

Specific topics include:

- Advantages and drawbacks of different approaches.
- Performance, security and interoperability of Internet GIS
- Institutional impacts of Internet GIS, including spatial information sharing and a digital spatial data library.
- Organizational impacts, including spatial data publication and interpretation, and public GIS education.

Intended Audience: This workshop is intended for public and private sector managers, elected officials, and policy professionals, database developers and administrators, and GIS professionals.

Introduction to Digital Imagery and Remote Sensing: What You Can Do With It

This workshop is directed at local, state, and regional governmental organizations that are interested in looking at digital imagery as a new approach to obtaining information about their land. The workshop will be divided into three succinct sections: (a) defining and choosing the right imagery for your application, (2) methods and approaches of remote sensing, and (c) applications of these datasets. Specific topics include:

- Digital Imagery vs. Film
- Choosing the Appropriate Imagery for your Application
- Imagery Cost Considerations
- Turning Imagery into GIS Datasets
- Applications of Remotely Sensed Data for Urban Planning, Emergency Management, Land Cover Analysis

Intended Audience: This workshop is intended for state, regional, and local government department managers and GIS/Remote Sensing analysts.

Introduction to GPS

The use of the Global Positioning System (GPS) has become pervasive in the GIS and Surveying communities, and with anyone who needs or collects data that has a geographic or

locational component. Local, state and federal agencies regularly use it for a myriad of purposes including E911, utility locations, pavement inventories, biological studies and more. In the private sector, surveyors and other consultants use GPS in their everyday work. Even hikers, boaters and hunters rely on GPS to document their fishing holes, hunting blinds and to leave virtual bread crumb trails. This data finds its way into thousands of different databases and maps and is used in every conceivable application.

GPS is a highly specialized technology that, by its very nature, is prone to accidental misapplication; and it will produce inaccurate results that are not recognized to the untrained user. This workshop will, in a non-technical, yet thorough manner, explore the GPS satellite constellation, how geographic positions are determined, sources of errors in GPS data collection, and the types of GPS receivers with the goal of arming users with the ability to achieve the results they expect and need in their work. Specific topics include:

- The Global Positioning System – satellites, control and receivers
- How GPS works - Measurements from 12,000 miles up!
- Latitude and Longitude
- Factors affecting the accuracy of GPS measurements
- Determining the accuracy of my GPS measurements
- How to obtain more accurate results
- Types of GPS receivers
- Methods of making GPS measurements – Static, Rapid Static, RTK
- Russian and European satellite navigation systems

Intended Audience: Any person who uses a GPS receiver, or who relies on or uses geographic locations determined by GPS measurements.

Introduction to Object-Oriented Spatio-Temporal Data Modeling

No matter what kind and where you get your time series data, the management of this data is a difficult issue that affects multiple levels of information modeling. The simplest questions are how to store, retrieve and display this data, but handling spatio-temporal data can become quite complicated depending on your application requirements. While mathematical theory and object-oriented concepts can be used to integrate space and time in a seamless manner, practical case studies are not yet in great abundance. This workshop presents the current state of knowledge in developing a spatio-temporal data model. This workshop is designed to provide fundamentals of spatio-temporal data modeling; a case study of urban applications at the county level; various issues related with modeling such as how to structure, store, query, and display time series data. Specific topics include:

- What are space and time, and how they can be integrated
- Introduction to object-oriented modeling
- Mathematical and object-oriented approaches
- Database concepts
- Modeling spatio-temporal data at conceptual, logical, and physical levels
- Components of a spatio-temporal data model
- How to design spatial, temporal and spatio-temporal query operators
- Various issues and case study related to modeling Land Parcels
- Discussion of environmental and other case studies

Intended Audience: Intended for technical managers and designers of spatial databases, and applications dealing with time series data. This workshop will help managers and designers to better understand the complex process of designing and implementing a spatio-temporal database. Understanding of relational database management systems (RDBMS) and object-relational databases is required, and programming experience will be helpful.

An Introduction to Public Participation GIS: Using GIS to Support Community Decision Making

As GIS becomes more widely available, many organizations and community groups are taking GIS out of the back room and are using it in public settings. Using GIS technology to engage various "publics" in decision making requires more than traditional GIS skills. This course focuses on the process of entering into this type of engagement. It will also review how GIS techniques and software can be adapted for use in community settings. Using real world examples, the course will explore both government and community-led projects that encourage citizen participation and engagement. Although this workshop will be focused on PPGIS within North America our case studies will illustrate the wide variability in the presence of governmental, societal, and technological infrastructure in different communities. Specific topics include:

- PPGIS for Civic Engagement
- Principles and Methods of Community Organizing and Engagement
- Innovative Use of Technologies
- Visual Communication

Intended Audience: Individuals who have GIS experience and want to expand their skills to reach out and engage the public. Participants should be well versed in GIS general practices and analysis.

LIDAR Concepts, Principals and Applications

LIDAR (LIght Detection And Ranging) has become widely accepted tool to generate accurate terrain models used in a variety of GIS applications. This workshop will provide an overview of this exciting technology. A history of this advanced mapping tool will be discussed as well as a review it's current and future trends. The workshop will describe

potential applications and will provide case studies of how this data has been used by agencies throughout the United States. Specific topics include:

- LIDAR technology summary and how it works
- Terminology and specifications
- Airborne acquisition, mapping workflow and post processing methods
- Quality control pointers and potential error sources
- LIDAR processing software demonstration
- Future trends in the technology
- Case studies from exemplary projects

Intended Audience: This workshop is for newcomers to the LIDAR technology who want to get a basic understanding of how the tool works, what the map production workflow is like, and how they may be able to incorporate this type of data into their GIS.

Public Data, Public Access, Privacy, and Security: U.S. Law and Policy

As data distribution capacities increase, there is increasing tension between access to public records as a foundation of a free society, citizen expectations of confidentiality, and protection of public security. What data are subject to Freedom of Information laws? What about privacy restrictions and homeland security concerns? Can a government raise revenue (or defray maintenance costs) by charging market prices for the data? What about liability for data errors? This workshop will focus on the critical legal issues and the policy options they frame. Specific topics include:

- State and federal Freedom of Information laws
- State and federal informational privacy laws
- Secrecy and homeland security protections
- Balancing public access, privacy, and secrecy
- Data sales vs. data access
- Protecting ownership and minimizing liability
- Policy and technical considerations

Intended Audience: This workshop is intended for public sector managers, elected officials, and policy professionals, database developers and administrators, and GIS professionals.

Quality Management: Introduction to Issue Tracking

Geospatial applications and data development "issues" are defects, errors, bugs, omissions, or usability problems that negatively impact a deliverable's quality. Unresolved issues are important to find, prioritize, and resolve prior to reducing user satisfaction and blocking project completion. Issue tracking improves geospatial application and database development project quality by documenting defects; measuring quality, determining project status; and managing, prioritizing, scheduling, and communicating development and quality assurance tasks. Problem resolution with a web-enabled issue tracking database system is an important technique that can aid in improving the performance of development teams, and increasing the effectiveness of their development processes. This workshop will explain the issue resolution workflow, and the use of an issue tracking system. Specific topics include:

- Improve and mature the application and data development process
- Document and classify errors, features (i.e. capabilities), and inquiries
- Administer the workflow for resolving development issues
- Effectively manage priorities and schedule resources for issue resolution
- Leverage lessons learned from prior projects

Intended Audience: Project managers, project directors, quality managers, and applications and data development professionals interested in coordinating project quality management efforts while attending to schedules and budgets.

Transportation Spatial Database Design

Although almost all data maintained by transportation agencies may be considered as spatial, the data used by GIS applications are generally separate from those used by the mainstream applications of the agency. The workshop will show the student how to develop an integrated multimodal database design for transportation agencies that not only serves to break down cross-functional barriers but also offers a foundation for true enterprise-level spatial databases. Such a design offers the opportunity for GIS to come out of the backroom and be a viable real-time agency management tool. Specific topics include:

- Basics of database design and UML
- Survey of major transportation data structures in use today
- Dataset and feature-level metadata
- Support for transactional updates
- Workflow control
- Treating location as a relationship between a position and a datum
- Separating features into their component elements.
- Identifying events and characteristics

Intended Audience: Students completing this workshop will be able to create database designs that support such functions as reproducing the state of the dataset at any historical point in time, storing data once and use it many times, providing certified datasets and changed-record updates to external users without significant processing overhead, and integrating stovepipe datasets in to a comprehensive multimodal enterprise database for use by both GIS and non-GIS applications. To get the most out of the workshop, students should be prepared to discuss at least one spatial database design issue they presently face at work.